

**REMARKS/ARGUMENTS**

The Examiner is thanked for the performance of a thorough search.

In this reply, Claims 1, 13, 17, and 19-36 have been amended. Claims 40 and 41 have been added. Hence, Claims 1-41 are pending in the application.

**OBJECTIONS TO THE CLAIMS**

The Office Action objected to Claim 13 because of a grammatical error. Claim 13 has been amended to remedy this error. Applicants respectfully request that the objection to Claim 13 be withdrawn.

**CLAIM REJECTIONS—35 U.S.C. § 101**

Claims 1-39 were rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. The rejection is respectfully traversed.

Claims 1-39 are directed to inventions that may be practically applied in various environments to produce useful, concrete, and tangible results. The results of these claims are data sets that have been “densified” relative to at least one dimension. The “densified” data sets **are** brought into existence, as can be seen clearly from the “generating” steps of the independent claims. Additionally, the claims do not recite any purely mathematical manipulations. The recited steps do not involve math, so the recited steps cannot properly be said to recite any mathematical manipulations.

The densified data sets that are the results of the claims are highly useful and may be practically applied in various data processing environments. For example, paragraph [0011] of the specification explains:

Densification is **useful for a variety of situations**. For example, queries in some multidimensional database systems (e.g., On-Line Analytical Processing (OLAP)) **require data to be densified along the time dimension**. Also, some users, such

as OLAP users, are accustomed to seeing the data in a densified format, especially when window functions are computed and presented. For example, if there are no sales for a particular day, **some users still want to see a display showing the running total of sales, the day, and a blank space in the sales column** (because the running total is a window function in OLAP, which usually displays densified data).

Clearly, then, Claims 1-39 are directed to useful inventions with various different practical applications. Claims 1-39 do not recite purely mathematical manipulations.

The Office Action additionally rejected Claims 19-36 for allegedly reciting intangible transmission media. Claims 19-36 have been amended to recite “machine-readable **storage** media.” Applicants respectfully submit that such amendment remedies any insufficiency of Claims 19-36 under 35 U.S.C. § 101.

For at least the above reasons, Applicants respectfully request that the rejections of Claims 1-39 under 35 U.S.C. § 101 be withdrawn.

#### CLAIM REJECTIONS—35 U.S.C. § 112, SECOND PARAGRAPH

Claims 17, 18, and 35-39 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Specifically, these claims were rejected because they allegedly either recited, or depended from a claim that recited, a “negative limitation.”

MPEP 2173.05(i) says:

The current view of the courts is that **there is nothing inherently ambiguous or uncertain about a negative limitation**. So long as the boundaries of the patent protection sought are set forth definitely, **albeit negatively**, the claim **complies with the requirements of 35 U.S.C. § 112, second paragraph**.

The only reason that the Office Action rejected Claims 17, 18 and 35-39 under 35 U.S.C. § 112, second paragraph, was the presence of the alleged “negative limitation.” Inasmuch as the MPEP says that negative limitations are not, by themselves, sufficient reasons to support a

rejection under 35 U.S.C. § 112, second paragraph, Applicants respectfully request that the rejections of Claims 17, 18, and 35-39 under 35 U.S.C. § 112, second paragraph, be withdrawn.

CLAIM REJECTIONS—35 U.S.C. § 102

Claims 1-2, 4-5, and 16-18 were rejected under 35 U.S.C. § 102(b) as being anticipated, allegedly, by U.S. Patent No. 6,397,214 (“Rogers”). In view of the amendments to Claims 1 and 17, the rejection is respectfully traversed. Support the amendment to Claim 1 is found, for example, in paragraph [0065] of the specification, which refers to “mini joins.”

As amended, Claim 1 recites, among other features, “wherein the first set of data is **not dense** relative to a first dimension of the plurality of dimensions;” and “wherein the second set of data is **dense** relative to the first dimension.”

Inasmuch as the Applicants are entitled to be their own lexicographers, and inasmuch as the language of the claims must be interpreted in light of the specification, the meaning of the term “dense” as recited in Claim 1 must be understood by the definition of that term expressly recited in the specification, specifically in paragraph [0009]:

A fact table is referred to as “dense” along a dimension 'D' **if the fact table contains all possible values of 'D' for any given combination of the other dimensional values in the fact table**. For example, assume that the REGION dimension has only three possible values RGN1, RGN2 and RGN3. The SALES table is dense relative to the REGION dimension **if, for every combination (t, p) reflected in the SALES table, the SALES table includes rows for the dimension value combinations (t, p, RGN1), (t, p, RGN2) and (t, p, RGN3).**

Claim 1 requires that the first data set **not** be dense relative to the first dimension, and that the second data set **be** dense relative to the first dimension. Unless the second data set contains all possible values of the first dimension for any given combination of the other dimensional values in a fact table, that fact table is **not** dense relative to the first dimension.

The Office Action apparently analogizes the “left table” of Rogers’ FIG. 1A to the “first set” of Claim 1. The Office Action apparently analogizes the “fully outer joined” table of Rogers’ FIG. 1D to the “second set” of Claim 1. The Office Action apparently analogizes the “name” column to the “first dimension” of Claim 1.

The table of FIG. 1D cannot be **dense** relative to the alleged “name dimension” unless the table of FIG. 1D contains, for each value of the alleged “department dimension” of the “left table” of FIG. 1A (which is the only other dimension in that table), **all possible values** of the alleged “name dimension.” Actually, the “name” column does not even correspond to a dimension that can be densified, because that column apparently can contain **any** value (thus, making the name dimension dense would require the generation of an infinite number of rows). However, assuming, for sake of argument, that all of the possible values of the alleged “name dimension” are those shown in FIG. 1D (namely, “John Smith,” “Mary White,” “Pete Sellers,” “Jane Yates,” and “Jim Black”), the table shown in FIG. 1D **still** is **not dense** relative to the alleged “name dimension.”

The table shown in FIG. 1D is not dense relative to the alleged “name dimension” because, if it were, then, for each department value actually occurring in the “department dimension” of the “left table” of FIG. 1A, and for **each possible name value** (even those not actually occurring in the “left table” of FIG. 1A), the table shown in FIG. 1D would need to contain a separate row with both that department value **and** that name value. The department values actually occurring in the “left table” of FIG. 1A are “Accounting,” “Sales,” and “Personnel.” Yet, the table of FIG. 1D **does not** contain rows for [“Accounting,” “Pete Sellers”], [“Accounting,” “Jane Yates”], [“Accounting,” “Jim Black”], [“Sales,” “John Smith”], [“Sales,” “Mary White”], [“Sales,” “Jane Yates”], [“Sales,” “Jim Black”], [“Personnel,” “John Smith”], [“Personnel,” “Mary White”], [“Personnel,” “Pete Sellers”], or [“Personnel,” “Jim

Black”]. Therefore, the table shown in FIG. 1D is **not dense** relative to the alleged “name dimension.” Performing a “full outer join” between two tables is **not** guaranteed to produce a data set that is dense relative to any particular dimension of either of those two tables.

For at least the above reasons, Applicants respectfully submit that Claim 1 is patentable over Rogers under 35 U.S.C. § 102(b).

Claim 17, as amended, also recites “wherein the first set of data is not dense relative to a first dimension of the plurality of dimensions;” and “wherein the second set of data is dense relative to the first dimension.” Therefore, Applicants respectfully submit that Claim 17 is also patentable over Rogers under 35 U.S.C. § 102(b) for at least the reasons discussed above in connection with Claim 1.

The remaining claims rejected under 35 U.S.C. § 102(b) are either analogous to or dependent from either Claim 1 or Claim 17. Therefore, Applicants respectfully submit that these remaining claims are also patentable over Rogers under 35 U.S.C. § 102(b) for at least the reasons discussed above in connection with Claims 1 and 17.

#### CLAIM REJECTIONS—35 U.S.C. § 103

Claims 3, 6-15, and 19-39 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Rogers in view of U.S. Patent No. 6,298,342 (“Graefe”). The rejections are respectfully traversed.

Claims 3, 6-15, and 19-39 are either analogous to or dependent from either Claim 1 or Claim 17. As is discussed above, Rogers, taken individually, does not disclose, teach, or suggest certain features of Claim 1 and Claim 17. Graefe, taken individually, also does not disclose, teach, or suggest these features. Indeed, the Office Action does not even allege that Graefe discloses, teaches, or suggests these features, relying solely on Rogers to do so,

allegedly. Therefore, even if Rogers and Graefe could be combined, the combination still would not disclose, teach, or suggest all of the features of Claim 1, Claim 17, the claims that are analogous to Claim 1 or Claim 17, or the claims that inherit these features by virtue of their dependence from Claim 1 or Claim 17.

Applicants respectfully submit that Claims 3, 6-15, and 19-39 are patentable, under 35 U.S.C. § 103(a), over Rogers and Graefe, taken individually or in combination, for at least the reasons discussed above.

#### NEW CLAIMS

Claims 40 and 41 are new claims that recite features that are not even alleged to be disclosed, taught, or suggested by any of the cited references.

CONCLUSION

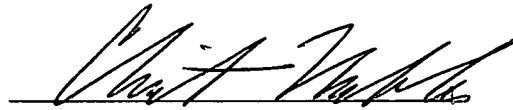
For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Please charge any shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,

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